

Attorney Docket No. 1001-021C1 Express Mail Label No. EL 564 195 229 US

## **CLAIMS**

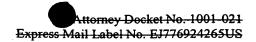
## WHAT IS CLAIMED IS:

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- 1. A system for reinforcement of an automotive vehicle frame, comprising:
  - (a) a skeleton member having a plurality of reinforcing ribs incorporated therein adapted for placement in a cavity defined in an automotive vehicle frame; and
    - (b) an expandable material over at least a portion of said skeleton member.
- 2. The system as claimed in claim 1, wherein said skeleton member is adapted for reinforcing a vehicle roof.
- 3. The system as claimed in claim 1, wherein said skeleton member is adapted for reinforcing a vehicle pillar.
  - 4. The system as claimed in claim 1, wherein said skeleton member is adapted for reinforcing a vehicle frame rail.
- 5. The system as claimed in claim 1, wherein said skeleton member is adapted for reinforcing a vehicle frame cross member.
  - 6. The system as claimed in claim 1, wherein said skeleton member is adapted for reinforcing a vehicle window frame.
  - 7. The system as claimed in claim 1, wherein said skeleton member is adapted for reinforcing a vehicle deck lid.



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- 8. The system as claimed in claim 1, wherein said skeleton member is adapted for reinforcing a vehicle hatch.
- 9. A member for use in a system for reinforcement of an automotive vehicle frame in response to an external load, comprising:

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- (a) a first portion having a plurality of beam elements with a longitudinal axis generally non-parallel to the load; and
- (b) a second portion contiguous with said first portion, the second portion having a surface adapted for carrying an expandable material, which upon expansion helps distribute load over said surface in response to said load.
- 10. The member as claimed in claim 9, wherein said material is a polymeric material.
- 11. The member as claimed in claim 10, wherein said material is a polymeric foam.
  - 12. The member as claimed in claim 9, wherein said expandable material is an epoxy-based polymer foam.
- 20 13. The member as claimed in claim 9, wherein said expandable material is a heat activated expandable polymer foam.
  - 14. The member as claimed in claim 9, wherein said expandable material is an expandable plastic foam that is generally free of tack to the touch.
  - 15. The member as claimed in claim 9, wherein said expandable material is an expandable plastic foam that can be activated at a temperature encountered in an automotive vehicle paint operation.

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- 16. A reinforced roof and pillar system for an automotive vehicle, comprising:
- (a) an automotive vehicle frame for a roof and pillar of an automotive vehicle, said frame having a plurality of wall portions defining a cavity therein; and
- (b) a skeleton member disposed within said cavity and having a structural foam material in sealing contact with said skeleton member and at least one of said plurality of wall portions.
- 17. The member as claimed in claim 16, wherein said expandable material is a polymer foam.
  - 18. The member as claimed in claim 16, wherein said expandable material is an epoxy-based polymer foam.
- 15 19. The member as claimed in claim 16, wherein said expandable material is a heat activated expandable polymer foam.
  - 20. The member as claimed in claim 16, wherein said expandable material is an expandable polymer foam that is generally free of tack to the touch.
  - 21. The member as claimed in claim 16, wherein said expandable material is an expandable plastic foam that can be activated at a temperature encountered in an automotive vehicle paint operation.

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